Thank you for the opportunity to speak today. My name is Dr. Stephanie Fox-Rawlings. I am a Senior Fellow at the National Center for Health Research. Our research center analyzes scientific and medical data and provides objective health information to patients, providers, and policymakers. We do not accept funding from industry.

We are concerned that there is insufficient high quality research data to determine the exact risks of recycled crumb rubber for playgrounds and athletic fields. This uncertainty is especially problematic because artificial turf is currently used on more than 12,000 athletic fields and numerous playgrounds in the U.S.¹

Scientific evidence suggests that crumb rubber may not be safe when used on playground and playing field surfaces. Recycled tire rubber includes phthalates, polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), heavy metals, and other chemicals known or suspected to cause adverse health effects.²³⁴⁵ Phthalates can alter hormones. Some PAHs may increase a person’s chance of developing cancer.⁶⁷ While one time or sporadic exposures are unlikely to cause long-term harm, repeated exposures over years, especially during critical developmental periods, raise the likelihood of harm.

These fields can also cause short-term harms. Artificial turf generates dust which may exacerbate asthma for children.⁸⁹ Fields heat up much more than ambient temperature, which can cause heat stress and burns.¹⁰¹¹¹²

We are encouraged that federal agencies are taking an interest in this issue in response to numerous consumer and parent complaints over many years. In addition to NTP’s research, last year the EPA, CDC and CPSC teamed up to investigate the safety of crumb rubber on playgrounds and playing fields.⁸¹³¹⁴

While we support the NTPs research into the health effects of crumb rubber, we strongly encourage the NTP and its stakeholders to uphold the scientific integrity of these studies so that they actually address the gaps in the current literature. The fact is that the research on the health risks of recycled tire rubber has been insufficient and inadequate. We need better scientific data to know the short-term and long-term risks.

Some studies provide evidence that tire crumb surfaces pose safety risks, while others suggest that the risk is minimal. However, the studies that are more reassuring do not comprehensively
evaluate health risks from exposure to recycled tire crumb material. In addition, many studies of air quality use stationary measures, while particulate matter becomes airborne during activity, so these measurements may not accurately reflect exposures during play activities.\textsuperscript{15}

NTP’s studies should help to fill knowledge gaps. However, this will only occur if the studies are designed to answer these questions. We encourage the NTP to keep the following research design issues in mind:

1. **Research will be most informative if it considers multiple conditions and routes of exposure.** Different types of chemicals can be released under various conditions. For example, rubber can be consumed because it is kicked up into a player’s mouth or gets onto a child’s hands before they eat. In models of digestion, small amounts of rubber were found to release PAHs and metals.\textsuperscript{4,5,16} In addition, the higher temperatures of fields can increase the release of airborne chemicals.\textsuperscript{17} There may also be changes in the amount and types of chemicals released as the rubber material degrades, which could greatly alter the health impacts for those playing on the field or playground. Degradation can also create very small particles that can be inhaled as well as coating skin, wounds, clothing, and toys.

2. **Studies in adult animals may not accurately reflect effects during development.** Children and young rats have different exposure rates to environmental chemicals than adults due to differences in size, organ maturity, and behavior.

3. **Short-term studies in rats may be too short, preventing conclusive evidence about identifying effects on their health.** The NTP website suggests that animal studies are only intended to take 2 weeks,\textsuperscript{18} which would likely be insufficient to see much evidence of tumor formation, detrimental developmental effects, or other harms.

4. **Differences in risks between male and female rats are well known, and thus research on both sexes should be conducted.**

In addition to issues related to toxicology, fields made of crumb rubber are touted as reducing injuries compared to grass. Research has shown that this is not the case, and some studies have indicated increased risk for joint injuries and mild traumatic brain injury.\textsuperscript{19,20} In other words, we can conclude that grass is a relatively safe alternative. We can't say that of artificial turf and crumb rubber.

The safety of playground and playing field materials is an important issue for children, families, athletes, and all individuals engaging in leisure and professional activities on these surfaces. We commend the NTP for providing an open discussion on their study of crumb rubber. This represents a positive effort to help ensure that this widely-used material is safe for children and athletes. Thorough and transparent research with clearly communicated data will advance evidence that will be accepted by the scientific community and used effectively by policy makers and the public. Meanwhile, NTP should be transparent about evidence indicating safety concerns.

Thank you for the opportunity to express our views.


